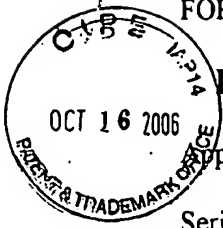


FORM PTO-1449



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Detlef Müller-Schulte

Serial No. : 10/516,629 / Conf. No. 4567

Filing Date : December 1, 2004

Examiner / Group Art Unit : Unsu-Jung / 1641

Title : THERMOSENSITIVE POLYMER CARRIER  
WITH CHANGEABLE PHYSICAL STRUCTURE  
FOR BIOCHEMICAL ANALYSIS,  
DIAGNOSTICS AND THERAPY

Attorney File : BS0940US (#90713)

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

U S PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name
UJ	3,215,572	11/2/65	Papell
—	3,652,761	3/28/72	Weetall
—	3,917,538	11/4/75	Rosensweig
—	3,970,518	7/20/76	Giaever
—	4,070,246	1/24/78	Kennedy, et al.
—	4,115,534	9/19/78	Ithakissios
—	4,169,804	10/2/79	Yapel, Jr.
—	4,230,685	10/28/80	Senyei, et al.

Examiner: /Unsu Jung/

Date: 01/04/2007

2

UJ	4,247,406	1/27/81	Widder, et al.
	4,267,234	5/12/81	Rembaum
	4,329,241	5/11/82	Massart
	4,345,588	8/24/82	Widder, et al.
	4,357,259	11/2/82	Senyei, et al.
	4,369,226	1/18/83	Rembaum
	4,452,773	6/5/84	Molday
	4,609,707	9/2/86	Nowinski, et al.
	4,628,037	12/9/86	Chagnon, et al.
	4,647,447	3/3/87	Gries, et al.
	4,654,267	3/31/87	Ugelstad, et al.
	4,662,359	5/5/87	Gordon
	4,675,173	6/23/87	Widder
	4,735,796	4/5/88	Gordon
	4,752,638	6/21/88	Nowinski, et al.
	4,780,409	10/25/88	Monji, et al.
	4,783,409	11/8/88	Tosa, et al.
	4,827,945	5/9/89	Groman, et al.
	4,832,466	5/23/89	Nishimura, et al.
	4,861,705	8/29/89	Margel
	4,912,032	3/27/90	Hoffman, et al.
	4,965,007	10/23/90	Yudelson
V	5,013,669	5/7/91	Peters, Jr., et al.

Examiner: /Unsu Jung/

Date: 01/04/2007

3

UJ	5,053,228	10/1/91	Mori, et al.
	5,141,740	8/25/92	Rajagopalan, et al.
	5,221,322	6/22/93	Tokuoka, et al.
	5,226,902	7/13/93	Bae, et al.
	5,252,318	10/12/93	Joshi, et al.
	5,441,732	8/15/95	Hoeg, et al.
	5,451,411	9/19/95	Gombotz, et al.
	5,453,186	9/26/95	Muller, et al.
	5,492,814	2/20/96	Weissleder
	5,599,534	2/4/97	Himmelstein, et al.
	5,618,800	4/8/97	Kabra, et al.
	5,674,521	10/7/97	Gehrke, et al.
	5,711,884	1/27/98	Asher, et al.
	5,753,261	5/19/98	Fernandez, et al.
	5,840,338	11/24/98	Roos, et al.
	5,854,078	12/29/98	Asher, et al.
	5,898,004	4/27/99	Asher, et al.
	5,939,485	8/14/99	Bromberg, et al.
	5,998,588	12/7/99	Hoffman, et al.
	6,014,246	1/11/2000	Asher, et al.
	6,020,210	2/1/2000	Miltenyi
	6,094,273	7/25/2000	Asher, et al.
V	6,097,530	8/1/2000	Asher, et al.

Examiner: /Unsu Jung/

Date: 01/04/2007

4

UJ	6,160,084	12/12/2000	Langer, et al.
—	6,165,389	12/26/2000	Asher, et al.
—	6,187,599	2/13/2001	Asher, et al.
—	6,361,944	3/26/2002	Mirkin, et al.
—	6,428,811	8/6/2002	West, et al.
—	6,544,800	4/8/2003	Asher
↓	6,645,517	11/11/2003	West, et al.

U.S. Published Applications

Examiner Initial	Document Number	Date	Name
UJ	20010014468	8/16/2001	Muller-Schulte
—	20010026946	10/4/2001	Asher
—	20020031841	3/14/2002	Asher, et al.
—	20020032246	3/14/2002	Asher, et al.
—	20020169235	11/14/2002	West, et al.
↓	20060057192	3/16/2006	Kane

Foreign Patent Documents

Examiner Initial	Document Number	Date	Country	Translation (Yes/No)
UJ	EP0275285	7/27/88	EPO	No
—	EP0586052	3/9/94	EPO	No
—	DE3502998	7/31/86	Germany	Yes
↓	DE3508000	9/4/86	Germany	Yes

Examiner: /Unsu Jung/

Date: 01/04/2007

5

UJ	DE3811042	10/19/89	Germany	Yes
	DE3933210	4/11/91	Germany	Yes
	DE4129901	3/11/93	Germany	Yes
	DE4201461	7/22/93	Germany	Yes
	DE4412651	10/19/95	Germany	Yes
	DE19800294	7/8/99	Germany	Yes
	WO 8911154	11/16/89	WO	No
	WO 9007380	7/12/90	WO	No
	WO 9222201	12/23/92	WO	No
	WO 9704862	2/13/97	WO	No
	WO 9962079	12/2/99	WO	No
	WO 0105586	1/25/01	WO	No
	WO 03026618	4/3/2003	WO	No

Other Prior Art (Inc. Author, Title, Date, Pertinent Pages, Etc) \*\*\*

Examiner

Initial Document

\_\_\_\_\_ Askerman, et al., *J. Histochem. Cytochem*, Vol. 31, 433 (1983)  
 \_\_\_\_\_ Asano, et al., *Polym. Gels & Networks*, Vol. 3, 281 (1995)  
 \_\_\_\_\_ Birell, et al., *J. Histochem. Cytochem.*, Vol. 35, 843 (1987)  
 \_\_\_\_\_ Buske, et al., *Colloids & Surfaces*, Vol. 12, 195 (1984)  
 \_\_\_\_\_ Chu, et al., *Polym. Bull.*, Vol. 44, 337 (2000)  
 \_\_\_\_\_ Ebara, et al., *J. Appl. Polymer Sci.*, Vol. 39, 335 (2001)  
 \_\_\_\_\_ Englebienne, *Analyst*, Vol. 123, 1599 (1998)

Examiner: /Unsu Jung/

Date: 01/04/2007

- \_\_\_\_ Gan and Lyon, *J. Am. Chem. Soc.*, Vol. 123, 7517 (2001)
- \_\_\_\_ Geoghagen, et al., *J. Histochem. Cytochem.*, Vol. 24, 1187 (1977)
- \_\_\_\_ Gilányi, et al., *Langmuir*, Vol. 17, 4764 (2001)
- \_\_\_\_ Gupta, et al., *Biomacromolecules*, Vol. 2, 239 (2001)
- \_\_\_\_ Häfeli, et al., *Scientific and Clinical Applications of Magnetic Carriers*,  
Nrsrg., Plenum Press, NY (1997)
- \_\_\_\_ Hermanson, G.T., *Bioconjugate Techniques*, Academic Press, San Diego,  
CA (1996)
- \_\_\_\_ Hoy, K.L., *Tables of Solubility Parameters*, Union Carbide Corp., South  
Charleston (1969)
- \_\_\_\_ Hua, et al., *J. Mater. Sci.*, Vol. 36, 731 (2001)
- \_\_\_\_ *Int. J. of Hyperthermia*, Vol. 9, 51 (1993)
- \_\_\_\_ Johansson and Mosbach, *Biochem. Biophys. Acta.*, Vol. 370, 399 (1974)
- \_\_\_\_ Jones and Lyon, *Macromolecules*, Vol. 33, 8301 (2000)
- \_\_\_\_ Jordan, et al., *J. Magnet. Mag.*, Vol. 225, 118 (2001)
- \_\_\_\_ Kaiser and Miskolczy, *J. Appl. Phys.*, Vol. 413, 1064 (1970)
- \_\_\_\_ Kanazawa, et al., *Anal. Sci.*, Vol. 18, 45 (2002)
- \_\_\_\_ Kang, et al., *Chem. Mater.*, Vol. 8, 2209 (1996)
- \_\_\_\_ Khalafalla and Reimers, *IEEE Transn. Magn.*, Vol. 16, 178 (1980)
- \_\_\_\_ Köhler, et al., *Sensors & Actuators B*, Vol. 76, 166 (2001)
- \_\_\_\_ Kondo and Fukuda, *J. Ferment. Bioeng.*, Vol. 84, 337 (1997)
- \_\_\_\_ Kondo, et al., *Appl. Microbiol. Biotechnol.*, Vol. 41, 99 (1994)
- \_\_\_\_ Kriwet, et al., *J. Contr. Release*, Vol. 56, 149 (1998)

- \_\_\_\_ Lee and Chen, *J. Appl. Polymer Sci.*, Vol. 82, 2487 (2001)
- \_\_\_\_ Lee, et al., *IEEE Transn. Magn.*, Vol. 28, 3180 (1992)
- \_\_\_\_ Li, et al., *J. Microencapsulation*, Vol. 15, 163 (1998)
- \_\_\_\_ Li, et al., *Radiat. Phys. Chem.*, Vol. 55, 173 (1999)
- \_\_\_\_ Maolin, et al., *Radiat. Phys. Chem.*, Vol. 57, 481 (2000)
- \_\_\_\_ Masuko, et al., *Biol. Pharm Bull.*, Vol. 18, 1802 (1995)
- \_\_\_\_ Matsuka, et al., *Polym. Gels & Networks*, Vol. 6, 319 (1998)
- \_\_\_\_ *Methods in Enzymology*, Vol. 112, Part A, Widder and Green Hrsg., Acad.  
(1987)
- \_\_\_\_ *Methods of Enzymology*, Mosbach Hrsg., Vol. 135, Part B, Academic Press  
Press, Inc., Orlando, FL (1995)
- \_\_\_\_ Mitsumori, et al., *Int. J. of Hyperthermia*, Vol. 10, 785 (1994)
- \_\_\_\_ Moeremans, et al., *Anal. Biochem.*, Vol. 145, 315 (1985)
- \_\_\_\_ *Monoclonal Antibodies and Cancer Therapy*, UCLA Symposia on  
Molecular and Cellular Biology, Reisfeld and Sell, Hrsg., Alan R. Riss, Inc.,  
NY (1985)
- \_\_\_\_ Müller-Schulte and Brunner, *J. Chromatogr.*, Vol. 711, 53 (1995)
- \_\_\_\_ Müller-Schulte and Horster, *Polymer Bull.*, Vol. 7, 77 (1982)
- \_\_\_\_ Müller-Schulte and Thomas, *Radiat. Phys. Chem.*, Vol. 35, 93 (1990)
- \_\_\_\_ Müller-Schulte, *Radiat. Phys. Chem.*, Vol. 42, 891 (1993)
- \_\_\_\_ Park and Hoffman, *J. Biomed. Mat. Res.*, Vol. 24, 21 (1990)
- \_\_\_\_ Quéllec, et al., *J. Biomed. Mat. Res.*, Vol. 42, 45 (1998)
- \_\_\_\_ Sato, et al., *J. Magn. Magn. Mat.*, Vol. 65, 252 (1987)

\_\_\_\_ Sayil and Okay, *Polym. Bull.*, Vol. 45, 175 (2000)

\_\_\_\_ Serizawa, et al., *Macromolecules*, Vol. 35, 10 (2002)

\_\_\_\_ Shinkai, et al., *Biocatalysis*, Vol. 5, 61 (1991)

\_\_\_\_ Stöber, et al., *J. Colloid Interface Sci.*, Vol. 26, 62 (1968)

\_\_\_\_ Tripathy, et al., *J. Appl. Polymer Sci.*, Vol. 81, 3296 (2001)

\_\_\_\_ *Ullmanns Enzyklopädie der Technischen Chemie*, 4, Aufl., Bd. 10

\_\_\_\_ Wang, et al., *Histochem.*, Vol. 83, 109 (1985)

\_\_\_\_ Wang, et al., *J. Am. Chem. Soc.*, Vol. 123, 11284 (2001)

\_\_\_\_ West and Halas, *Curr. Opinion Biotechn.*, Vol. 11, 215 (2000)

\_\_\_\_ Xue, et al., *Polymer*, Vol. 42, 3665 (2001)

\_\_\_\_ Zhang and Zhuo, *Eur. Polym. J.*, Vol. 36, 2301 (2000)

\_\_\_\_ Zhang, et al., *Langmuir*, Vol. 18, 2013 (2002)

\_\_\_\_ Zhu and Napper, *Langmuir*, Vol. 16, 8543 (2000)

\_\_\_\_  
Examiner

Date Considered:

\_\_\_\_  
Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant

\*\*\* It is noted that copies of the references listed under the section "Other Prior Art" will follow.